ANDREW RICHARD THOMPSON

Research Fisheries Biologist
Southwest Fisheries Science Center
8901 La Jolla Shores Drive
La Jolla, CA 92037

Office Phone: (858) 546-7132
Fax: (858) 546-7003
E-mail: andrew.thompson@noaa.gov

PROFESSIONAL EMPLYOMENT

- **Research Fisheries Biologist**, NOAA Fisheries, Southwest Fisheries Science Center (6/2009-present)
    - My research focuses on **larval fish and invertebrates** off the Pacific coast of North America. I analyze larvae and paralarvae collected from oceanic cruises, together with oceanographic and habitat conditions, to better understand **early life history** patterns, **population and community dynamics** and **connectivity** of marine species.
- **Biomonitor**, U.S. Fish and Wildlife Service, Carlsbad, CA (11/2007-5/2009)
    - I evaluated the **statistical rigor of monitoring strategies** associated with large-scale Habitat Conservation Plans in eastern Riverside, Imperial, and San Diego Counties. I analyzed data collected from monitoring programs of various endangered species. I also designed and implemented field studies with the goal of informing monitoring protocols, determining status of listed species, and furthering species conservation. I utilized modern sampling methods that incorporated model-based approaches to evaluate species status
- **Biologist,** U.S. Fish and Wildlife Service Carlsbad, CA (5/2006-10/2007)
    - I worked on projects that affected a variety of threatened and endangered Southern California species including the Santa Ana sucker, San Bernardino kangaroo rat, Delhi sands flower-loving fly, coastal California gnatcatcher, least Bell's vireo, Santa Ana wooly star, slender-horned spineflower, unarmored threespine stickleback and others. I wrote several biological opinions under Section 7 of the Endangered Species Act (ESA); worked on preparation of Habitat Conservation Plans under Section 10 of the ESA; prepared documents related to the National Environmental Policy Act; consulted with the US Army Corps of Engineers under Section 404 of the Clean Water Act; and wrote a five-year review on the status of the Federally Endangered El Segundo Blue butterfly. I also designed a biological monitoring and management plan for the endangered unarmored threespine stickleback and conducted research on and provided guidance for the monitoring and management of the threatened Santa Ana sucker. I presented the results of this research at several scientific conferences.
- **Postdoctoral Associate,** Natural History Museum of Los Angeles County (1/2004-4/2006)
    - I used **molecular techniques** (DNA sequencing, microsatellite analyses) to elucidate **phylogeography**, **phylogeny**, and **degree of connectivity** among populations **of marine fish** and **invertebrates** in the **Indo/Pacific** and **California/Baja California**. My duties included **all aspects of molecular analyses including laboratory work, statistical analysis of population genetics data, and preparation of manuscripts**. In addition**, I supervised several technicians that worked on various related projects**.
- **Graduate Student Researcher**, University of California Santa Barbara (6/1998-12/2003)
    - I designed and conduct a series of **ecological experiments and surveys** that assessed the factors influencing the **distribution and abundance of marine fish and invertebrates**. **I collection pelagic larvae with bongo nets and light traps, identified plankton and monitored the early life history of fish and invertebrates**. I extracted **otoliths** from fish to estimate **pelagic larval duration**. I performed **all statistical analyses**, presented the data at several domestic and international conferences, and published results in peer-reviewed journals. In addition, **I supervised and trained teams of employees for this work**.
- **Research Assistant,** University of Georgia (3/1998-5/1998)
    - I worked on a project examining the role of disturbance history on the community structure of aquatic marcroinvertebrates in third-order temperate streams. My duties included surveying physical and biological characteristics of streams, identifying and sorting macroinvertebrates, identifying and surveying stream fish, statistically analyzing the data and preparing technical reports.
- **Graduate Student Researcher**, University of Georgia (7/1995-3/1998)
    - I designed and implemented a study examining foraging behavior and habitat use of a benthic stream fish, the longnose dace, *Rhinichthys cataractae*, in a Southern

Appalachian stream. My duties included intensive surveying of fish and benthic marcoinvertebrate populations, identification of macroinvertebrates, **identification of fish and invertebrate larvae**, statistical analysis of the data, and the preparation and publication of results in a peer-reviewed journal.

- **Research Assistant,** Natural History Museum of Los Angeles County (1/1994-4/1995)
    - I assisted with lab and field experiments studying the ecology and **early life history** of **juvenile and larval California halibut**, *Paralichthys californicus*. My duties included surveying halibut densities in the field, setting up and designing lab experiments to evaluate **early life history** parameters such as growth under variable temperature regimes, **extracting and preparing otoliths** to evaluate aging, and preparing technical reports. I also **sorted plankton samples** collected on oceanic cruises.
- **Research Assistant,** University of Southern California (5/1993-11/1993)
    - I performed and analyzed various experiments studying the role of phosphotase in regulating the growth of cancersous cells.
- **Volunteer,** Natural Resources Defense Council (5/1992-8/1992)
    - I analyzed and summarized environmental documents dealing with the effect of sewage discharge on Santa Monica Bay and Palos Verdes peninsula.

EDUCATION

- **Ph.D.** University of California, Santa Barbara (12/2003)
    - Major: Ecology, Evolution and Marine Biology
    - Dissertation Title: *Population Ecology of Marine Mutualists*.
    - Co-advisors: Drs. Russell J. Schmitt and Sally J. Holbrook
- **M.S.** University of Georgia (3/1998).
    - Major: Forest Resources
    - Thesis Title: *Effects of spatial and temporal variability on habitat use by longnose dace, Rhinichthys cataractae.*
    - Advisor: Dr. Gary D. Grossman
- **B.S.** University of Southern California (5/1993)
    - Major: Biology
- **High School** Santa Monica High School (6/1989)

PUBLICATIONS

- **Thompson AR**, Auth TD, Brodeur RD, Bowlin NM, and Watson W. Dynamics of larval fish assemblages in the California Current System: A comparative study between Oregon and southern California. Marine Ecology Progress Series, *under revision*.
- Wells BK, Schroeder ID, Santora JA, Hazen EL, Bograd SJ, Bjorkstedt EP, Loeb VJ, McClatchie S, Weber ED, Watson W, **Thompson AR**, Peterson WT, Brodeur RD, Harding J, Field J, Sakuma K, Hayes S, Sydeman WJ, Losekoot ML, Thompson SA, Largier J, Kim SY, Chavez FP, Barceló C, Warzybok P, Bradley R, Jahncke J, Goericke R, Campbell GS, Hildebrand JA, Melin SR, DeLong RL, Gomez-Valdes J, Lavaniegos B, Gaxiola-Castro G, Golightly RT,. Schneider SR, Lo N, Suryan RM, Gladics AJ, Horton CA, Fisher J, Morgan C, Peterson J, Daly EA, Auth TD, and Abell J. State of the California Current 2012-2013: No such thing as an 'average' year. California Cooperative Oceanic Fisheries Investigations Reports **54**:37-71.
- **Thompson AR**, Adam TC, Hultgren KM, Thacker CE 2013. Ecology and evolution affect network structure in an intimate marine mutualism. American Naturalist **182**:E58-E72.
- Hitchman SM, Reynes NB, **Thompson AR** 2012. Larvae define spawning habitat of bocaccio rockfish, *Sebastes paucispinis*, within and around a large southern California marine reserve. Marine Ecology Progress Series **465**: 227–242.
- **Thompson AR**, Watson W, and Manion SM. 2012. Ichthyoplankton and station data for surface (Manta) and oblique (Bongo) plankton tows for California Cooperative Oceanic Fisheries Investigations Cruises and California Current Ecosystem Survey in 2009. U.S. Department of Commerce, NOAA Technical Memorandum NMFS, NOAA-TM-NMFS-SWFSC-492.
- Schwartz MW, Hellmann JJ, McLachlan JM, Sax DF, Borevitz JO, Brennan J, Camacho AE, Ceballos G, Clark JR, Doremus H, Early R, Etterson JR, Fielder D, Gill JL, Gonzalez P, Green N, Hannah L, Jamieson DW, Javeline D, Minteer BA, Odenbaugh J, Polasky S, Richardson DM, Root TL, Safford HD, Sala O, Schneider SH, **Thompson AR**, Williams JW, Vellend M, Vitt P, and Zellmer S 2012. Managed Relocation: Integrating the Scientific, Regulatory, and Ethical Challenges. BioScience 62:732-743.
- **Thompson AR**, Watson WW, McClatchie S, Weber ED 2012. Multi-scale sampling to evaluate assemblage dynamics in an oceanic marine reserve. PlosOne **7:** e33131

- Thacker CE, **Thompson AR**, and Roje DM 2011. Phylogeny and evolution of Indo-Pacific shrimp-associated gobies (Gobiiformes: Gobiidae) Molecular Phylogenetics and Evolution **59**:168-176.
- Karplus I and **Thompson AR** 2011. The partnership between Gobiid fishes and burrowing Alpheid shrimps. In: The Biology of Gobies. Edited by Patzner, R. A., Van Tassell, J. L., Larson, H.K., and B.G. Kapoor. Science Publishers Inc, New Hampshire, USA.
- Thacker CE, **Thompson AR**, Adam TA, and Chen JP 2010 Phylogeny and character evolution in the Indo-Pacific genus *Ctenogobiops* (Perciformes: Gobiidae). Ichthyological Research **57**:231-239.
- **Thompson AR**, Baskin J, Swift C, Haglund TR and Nagel RJ 2010. Influence of substrate dynamics on the distribution and abundance of the Federally Threatened Santa Ana sucker, *Catastomus santaanae*, in the Santa Ana River. Environmental Biology of Fishes **87**:321-332.
- Sax DF, Smith KF and **Thompson AR** 2009. Managed relocation: a nuanced evaluation is needed. Trends in Ecology and Evolution **24**:472-473.
- Richardson DM, Hellmann JJ, McLachlan J, Sax DF, Schwartz MW, Gonzalez P, Root T, Sala O, Schneider S, Ashe D, Brennan J, Camacho A, Clark J, Early R, Etterson J, Fielder D, Neel M, Polasky S, Safford H, Gill J, **Thompson AR** & M Vellend 2009. Multidimensional evaluation of managed relocation. Proceedings of the National Academy of Science **106**:9721-9724.
- Thacker CE, **Thompson AR**, Roje DM, and Shaw EY 2008. New expansions in old clades: population genetics and phylogeny of *Gnatholepis* species (Teleostei: Godiodei) in the Pacific. Marine Biology, **153**: 375-385.
- **Thompson AR**, Schmitt RJ and Nisbet RM 2006. Dynamics of mutualistic populations with open life histories. Journal of Animal Ecology, **75**:1239-1251.
- **Thompson AR**, Thacker CE, Shaw EY, and Roje DM 2006. Characterization of 16 microsatellite loci for a common coral reef fish, the fierce shrimp goby, *Ctenogobiops feroculus*. Molecular Ecology Notes, **6**: 918-920.
- **Thompson AR,** Thacker CE and Shaw EY 2005. Phylogeography of marine mutualists: Parallel patterns of genetic structure between obligate goby and shrimp partners. Molecular Ecology, **14**:3557-3572.
- **Thompson AR** 2005. Dynamics of demographically open mutualists: immigration, intraspecific competition, and predation impact goby populations. Oecologia, **143**:61-69.
- **Thompson AR** 2004. Effects of biotic (mutualism) and abiotic (habitat) factors on the distribution and abundance of a common coral reef fish. Marine and Freshwater Research, **55:**105-113.
- **Thompson AR** 2002. Habitat-use patterns of the fierce shrimpgoby (*Ctenogobiops feroculus*) at multiple scales: a geospatial approach. In 'Proceedings of the 9th International Coral Reef Symposium'. (Eds. M.K. Moosa, S. Soemodihardjo, A. Sugiarto, K. Romimohtarto, A. Nontji, Soekarno and Suharsono) **1:** 509-14. Ministry of Environment, the Indonesian Institute of Sciences and the International Society for Reef Studies, Bali, Indonesia.
- **Thompson AR**, Petty JT, and Grossman GD 2001. Multi-scale effects of resource patchiness on foraging behaviour and habitat use by longnose dace, *Rhinichthys cataractae*. Freshwater Biology, **46**:145-160.
- Sugarman JL, **Thompson AR**, Scavetta R, Glass CK, and Schoenthal AH 1995. Differential effects of two types of tumor promoters, okadaic acid and 12-0-tetradecanoyl-phorbol-13-acetate, on growth and differentiation of human myeloid leukemia cells. Molecular and Cellular Differentiation, **3:**51-71.

MANUSCRIPTS *IN PREP*

- **Thompson AR,** Hyde JR, Charter SR, Guo L, and Watson W. Larval sampling reveals biogeography of rockfishes in the Southern California Bight. for Marine Ecology Progress Series
- **Thompson AR**, Thacker CE, Shaw EY, and Roje DM. Biogeography and dispersal of a coral reef fish. for Molecular Ecology
- Wood DA, Vandergast AG, and **Thompson AR**. Habitat fragmentation induces increased population structuring of an endangered lizard. for Molecular Ecology

WORKING GROUPS

- Assisted Migration Working Group: 3 meetings in 2008-09

PROFESSIONAL TRAINING COURSES

- Early Life History of Marine Fishes Graduate Course, VIMS (6/2011)
- Computer Intensive Methods in Statistics Graduate Course, SIO (1/2011)
- NOAA course: Introduction to R Workshop (6/2009)
- USGS online course: Designing natural resource monitoring surveys (4/2009)
- USGS and NPS online course: Learn R (11/2008-12/2008)

- Mark Recapture Analysis Using Program Mark (6/2008)
- USGS online course: Occupancy modeling (5/2008)
- Clapper rail sampling (3/2008)
- Interagency Consultation for Endangered Species (5/2006)

TEACHING (all courses were taught at UCSB between 1999 and 2003)

- Methods in Aquatic Community Ecology (Fall 2002, Fall 2001, Spring 2001, Spring 2000). I designed and led a field ecology class that explored factors influencing community structure in a variety of aquatic ecolosystems such as lakes, streams and the ocean. I taught techniques in laboratory, field and statistical ecology.
- Applied Marine Ecology (Winter 2003, 2002 and 2001). I led sections in which topical issues in environmental marine ecology were discussed.
- Introduction to Ecology (Fall 1999). I led discussions in which students gave presentations on a variety of ecological issues.

MENTORING OF

- Graduate Students: Supervisor for USD masters student (2013-); Committee member for USD masters student (2009-2010)
- Undergraduate Students: Supervised undergraduate research projects (2003, 2012)
- High School Students: Mentored several students in the Upward Bound program (2009-2010)

INVITED PRESENTATIONS

- San Diego State University. San Diego, CA (2011)
- Scripps Institute of Oceanography. La Jolla, CA (2010)
- Scripps Institute of Oceanography. La Jolla, CA (2009)
- Southern California Academy of Sciences Annual Meeting. Fullerton, CA (2007)
- Pepperdine University Natural Sciences Seminar Series. Malibu, CA (2005)
- Natural History Museum of L.A. County Seminar Series. Los Angeles, CA (2005)
- Natural History Museum of L.A. County Seminar Series. Los Angeles, CA (2001)
- International Crustacean Society Annual Meeting. Melbourne, Australia (2001)

CONTRIBUTED PRESENTATIONS

- CalCOFI Annual Meeting. La Jolla, CA (2013)
- Trinational Sardine Forum. Ensenada, Mexico (2013)
- CalCOFI Annual Meeting. Monterrey, CA (2012)
- Western Society of Naturalists. Monterrey, CA (2012)
- American Society Ichthyologists and Herpetologists. Vancouver, Canada (2012)
- CalCOFI Annual Meeting. La Jolla, CA (2011)
- American Society of Ichthyology and Herpetology, Minneapolis, MN (2011)
- CalCOFI Annual Meeting. La Jolla, CA (2010)
- Western Society of Naturalists. San Diego, CA (2010)
- AAAS Pacific Division (coauthor). Ashland, OR (2010)
- Ocean Sciences. Portland, OR (2010)
- Desert Fishes Council. Ventura, CA (2007)
- American Fisheries Society. San Francisco, CA (2007)
- 7th International Indo-Pacific Fish Conference. Taipei, Taiwan (2005)
- Western Society of Naturalists. Sonoma, CA (2004)
- 10th International Coral Reef Symposium. Okinawa, Japan (2004)
- American Society Ichthyologists and Herpetologists. Norman, OK (2004)
- Western Society of Naturalists. Long Beach, CA (2003)
- Ecological Society of America. Savannah, GA (2003)
- Western Society of Naturalists. Monterrey, CA (2002)
- Western Society of Naturalists. Ventura, CA (2001)
- 9th International Coral Reef Symposium. Bali, Indonesia (2000)
- Western Society of Naturalists. Monterrey, CA (1999)
- Ecological Society of America. Baltimore, MD (1998)
- Association of Southeastern Biologists. Monroe, LA (1998)
- University of Georgia Student Seminar Series. Athens, GA (1998)
- American Society Ichthyologists and Herpetologists. Seattle, WA (1997)
- Long-Term Ecological Research Meeting. Athens, GA (1997)
- University of Georgia Student Seminar Series. Athens, GA (1997)

SCHOLARSHIPS/AWARDS

- Year-end performance bonus, NOAA (2011)

- Year-end performance bonus, NOAA (2010)
- Year-end performance bonus, NOAA (2009)
- Year-end performance bonus, USFWS (2008)
- STAR award, USFWS (2007)
- Graduate Dissertation Fellowship (2003) $5000 stipend plus tuition fees
- Worster Research Grant (2002) $5000 award to mentor an undergraduate student in developing and carrying out a research project.
- Block Grant (2002) $3600 stipend plus tuition fees
- Regents Fellowship (2002) $3600 stipend plus tuition fees
- Best Student Poster (2002) Western Society of Naturalists Annual Meeting
- NSF Research Training Grant (1998-2002) University of California, Santa Barbara. Covered research costs, tuition and living fees.
- Best Student Talk (1998) University of Georgia Student Seminar Series
- Best Student Talk (1997) University of Georgia Student Seminar Series
- University-Wide Scholarship (1996-1998) University of Georgia. Covered research costs, tuition and living fees.

RELEVANT COURSEWORK

- Undergraduate: General Biology I & II, Calculus I, Physical Geology, **General Chemistry I & II**, **Physics I & II**, Organic Chemistry I & II, Biochemistry, **Molecular Biology**, **Marine Invertebrate Zoology**, **Ichthyology**, **Biological Oceanography**, General Physiology, **Elementary Probability & Statistics**, Environmental Engineering, **Introduction to Ecology**, **Developmental Biology**
- Masters**: Limnology**, **Statistical Methods**, **Population Ecology**, **Stream Ecology, Aquatic Entomology, Lake Ecology, Research Statistical Design**
- Ph.D.: **Ecological Toxicology**, **Advanced Population Ecology**, Calculus II, **Geospatial Statistical Analysis, Ecological Models I & II**, **Molecular Markers**, **Theoretical Ecology**, **Physical Oceanography**

LANGUAGES

- Russian
- American Sign Language

CERTIFICATIONS

- SCUBA/Research Diving Certified
- Permis Mer: Certification to operate a boat in French Polynesia

SUMMARY OF SKILLS

- Wide knowledge of sampling design and statistical analyses
- Wide knowledge of the **early life history of fish and invertebrates in California and the Indo-Pacific**
- High degree of proficiency in preparing and writing manuscripts for peer-reviewed journals
- Extensive computer experience with Microsoft Office: Excel, Word, Powerpoint; Statistical programs**: JMP, Presence, Program Mark, Primer, R, SAS, Sigma Plot, Statistica**: **Spatial statistics programs: Surfer, Systat**; Population Modeling: **Mathematica**; Genetic analysis**: Arlequin, BOTTLENECK, Genemapper, Gene Scan H_P_Rare, MacVector, M_P_Val, Microchecker, Migrate, Mr. Bayes, Mr. Model test, Paup, Popgen, Sequencher, and Structure**
- Broad familiarity with California marine flora and fauna, North American stream flora and fauna, and tropical South Pacific flora and fauna
- Extensive knowledge of federal and state regulations regarding endangered, threatened, and sensitive terrestrial and aquatic species.